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## **Assessing Information Technology Products**

### **RELATED INVENTIONS**

This application claims the benefit of Provisional Application Serial Number 60/459,770, filed April 2, 2003, the entire disclosure of which is hereby incorporated herein by reference. The present invention is related to commonly-assigned U. S. Patents \_\_\_\_\_ (serial number 10/\_\_\_\_\_), entitled "Designing Information Technology Products", \_\_\_\_\_ (serial number 10/\_\_\_\_\_), entitled "Information Technology Portfolio Management", and \_\_\_\_\_ (serial number 10/\_\_\_\_\_), entitled "Identifying Platform Enablement Issues for Information Technology Products", which were filed concurrently herewith and which are hereby incorporated herein by reference.

## **BACKGROUND OF THE INVENTION**

### **Field of the Invention**

The present invention relates to assessing information technology products, and deals more particularly with techniques for comparing a product (including a product still under development) to a set of criteria. The comparison is preferably directed toward ensuring, and/or improving, the product's acceptance by its target marketplace.

### **Description of the Related Art**

Developing an information technology ("IT") product may require a tremendous allocation of resources. For a complex IT product, for example, thousands of person hours and a huge financial outlay may be expended during the development effort. If the product is successful in its target marketplace (or, equivalently, with its target audience), then this resource allocation is typically justified. However, in some cases, a product is not well-received. In these cases, it may happen that a financial return is not realized on the development effort and resource investment.

The market for IT products is highly competitive, and this competition is only increasing over time. If companies in the business of developing IT products are to prosper economically, it behooves them to take all reasonable steps to ensure that the products they develop will be desirable to their target marketplace.

A number of factors may influence whether an IT product is successful with its target

marketplace, and these factors may vary among different segments of the marketplace. In the industry, segments of the IT marketplace have sometimes been defined in terms of large business enterprises, medium-sized business enterprises, and small business enterprises. By convention, an enterprise employing over 1,000 people worldwide is considered a large business; those employing less than 100 people worldwide are considered small businesses; and those in between are considered to be medium-sized businesses.

As an example of how differences among marketplace segments influence a product's acceptance, a large business enterprise may employ a staff of well-trained and highly-skilled IT professionals; on the other hand, a medium-sized or small business may have few (or perhaps no) on-site IT personnel. Thus, an IT product that involves complex installation or usage procedures may be acceptable for the large business, but these same characteristics may not be acceptable in the medium-sized or small business environment.

Accordingly, what is needed are techniques for assessing IT products, particularly with regard to a product's target marketplace or market segment.

### **SUMMARY OF THE INVENTION**

An object of the present invention is to provide techniques for assessing information technology products.

Another object of the present invention is to provide techniques for comparing an IT

product (including a product still under development) to a set of criteria.

A further object of the present invention is to provide techniques for assessing an IT product with a view toward ensuring, and/or improving, the product's acceptance by its target marketplace or market segment.

Other objects and advantages of the present invention will be set forth in part in the description and in the drawings which follow and, in part, will be obvious from the description or may be learned by practice of the invention.

To achieve the foregoing objects, and in accordance with the purpose of the invention as broadly described herein, the present invention defines techniques for assessing an IT product. In one aspect of preferred embodiments, this comprises: determining a plurality of criteria that are important to the target market, and at least one attribute that may be used for measuring each of the criteria; specifying objective measurements for each of the attributes; and conducting an evaluation of the IT product. Conducting the evaluation preferably further comprises: inspecting a representation of the IT product, with reference to selected attributes; assigning attribute values to the selected attributes, according to how the IT product compares to the specified objective measurements; generating an assessment score, for the IT product, from the assigned attribute values; and generating a list of recommended actions, the list having an entry for each of the selected attributes for which the assigned attribute value falls below a threshold, each of the entries providing at least one suggestion for improving the assigned attribute value.

The list of recommended actions may be generated automatically, responsive to the assigned attribute values that fall below the threshold. Optionally, each of the attributes may be prioritized in view of its importance to the target market, in which case weights are preferably assigned to the attributes according to the prioritizations and used when generating the assessment score.

The assessment score may be programmatically generated. The conducting of the evaluation may be repeated at a plurality of plan checkpoints used in developing the IT product. Optionally, successful completion of each of the plan checkpoints may require the assessment score to exceed a predetermined threshold.

The product team that is developing the IT product may provide input for the evaluation by answering questions on a questionnaire that reflects the attributes. The answers to these questions, along with the assigned attribute values, the assessment score, and the list of recommended actions that result from evaluating the product, are preferably recorded in a workbook (which may be an electronic workbook). The workbook preferably serves as a single point of evaluation and communication, as well as providing a history of actions identified and pursued. The workbook (or, alternatively, portions thereof) may be provided to the product team.

Optionally, a special designation may be associated with the IT product if the assessment score exceeds a predefined threshold.

The present invention may also be used advantageously in methods of doing business. For example, techniques disclosed herein may be used by companies developing IT products, in order to assess those products. Preferably, the assessments aim to improve the product's acceptance in its target marketplace or market segment. Techniques disclosed herein may also be offered as methods of doing business whereby IT product assessments are performed for third parties, for example to assist a third party in improving a product's characteristics and desirability to the target marketplace or market segment. When provided for a fee, this assessment service may be provided under various revenue models, such as pay-per-use billing, a subscription service, monthly or other periodic billing, and so forth.

The present invention will now be described with reference to the following drawings, in which like reference numbers denote the same element throughout.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 illustrates example criteria and attributes used for a product assessment, according to the present invention;

Fig. 2 depicts example rankings showing the relative importance of assessment criteria for IT purchasers in a sample target market segment;

Fig. 3 shows an example of textual descriptions that may be defined to assist product assessors in assigning values to attributes in a consistent, objective manner;

Fig. 4 provides a flowchart that illustrates, at a high level, actions that are preferably carried out when establishing an assessment process according to the present invention;

Fig. 5 describes performing a product assessment in an iterative manner;

Fig. 6 provides a flowchart that depicts details of how a product assessment may be carried out;

Fig. 7 contains a sample questionnaire, of the type that may be used to solicit information from a product team whose IT product will be assessed;

Fig. 8 depicts an example of how two different product assessment scores may be used for assigning special designations to assessed products;

Fig. 9 illustrates a sample product assessment report;

Fig. 10 provides definitions of autonomic computing characteristics; and

Fig. 11 illustrates how attributes from several assessment criteria may be mapped to the autonomic computing characteristics of Fig. 10.

## **DESCRIPTION OF PREFERRED EMBODIMENTS**

The present invention provides techniques for assessing IT products, by comparing a product (including a product still under development) to a set of criteria. Each of these criteria has one or more attributes, and may be different in priority from one another. In preferred embodiments, a product assessment score is created as a result of the comparison. When necessary, a set of recommendations for product change is also created.

A goal of the assessment process disclosed herein is to improve the IT product being assessed, and in preferred embodiments, the improvements are directed toward securing the product's acceptance by its target marketplace or market segment. As discussed earlier, the IT marketplace is sometimes divided into three general market segments, based on the size of business enterprise (typically measured by number of employees) that will use the IT product. An alternative market segmentation can also be used. For example, the market segment may be based on industry focus. Preferably, the measurement criteria and attributes used in the assessment process are developed for a particular market segment. In this manner, the assessment process is capable of providing more precise indicators of product acceptance and, when necessary, more effective recommendations for product improvements. (References hereinafter to the marketplace and market segment are intended to be synonymous. These references are also intended to include a target audience that receives an IT product without paying a fee, and that is therefore outside the traditional definition of "market".)

By defining attributes for the assessment criteria with reference to the IT product's target market segment, the "wants and needs" of the target market segment are directly reflected by the



assessment process. Therefore, the product assessment score resulting from the assessment is an indicator of how well the assessed product will be received in its target market segment. The product assessment score is preferably expressed as a numeric value, based on computations performed with values of the measurement criteria and attributes, and may be used in a "go or no-go" decision for moving forward with product development and/or release to market.

Techniques of the present invention will be described herein with reference to a particular set of criteria and attributes developed to assess software products for delivery to both the small and medium-sized business ("SMB") markets (sometimes referred to as the "mid-market"), as well as algorithmic techniques for computing a product assessment score that is expressed as a percentage value. However, it should be noted that these descriptions are by way of illustrating use of the novel techniques of the present invention, and should not be construed as limiting the present invention to these examples. In particular, alternative target markets, alternative criteria, alternative attributes, and alternative techniques for computing and expressing a result of the assessment process may be used without deviating from the scope of the present invention.

Criteria developed for assessing products for delivery to the target market aim to ensure that a product satisfies the wants and needs of this market segment -- that is, not only the things that are considered strictly required for this market segment, but also those things that are preferred or "nice to have". In preferred embodiments, the overall focus of the criteria is on improving the product's "time to value" -- that is, enabling product purchasers to quickly realize a return on their investment -- as well ensuring that the product is affordable, easy to use, easy to

deploy, and easy to manage.

Ten representative criteria will now be described. Per-criterion attributes are also described for each of the criteria. These representative criteria and attributes may be used advantageously, by way of example, to assess a software product for the mid-market (or other target market). Fig. 1 provides a summary of this information.

1. **Priced to Market.** This criterion is directed toward determining how well the assessed product is priced for its target market. Attributes for this comparison include: (i) whether the product is priced to be competitive in this market; (ii) whether the price is linked or correlated to its usage (e.g., in terms of the number of users or the number of processors on which it will be installed); and (iii) whether the total cost of the solution is competitive and attractive to the target market.

2. **Easy to Install.** This criterion measures how easily the assessed product is installed in its intended market. Attributes used for this measurement include: (i) whether the installation can be performed using only a single server; (ii) whether operation of the product requires only a single server; (iii) whether installation of the product is quick (i.e., measurable in minutes, not hours); (iv) whether installation of the product is non-disruptive to the system and personnel; and (v) whether the product is OEM-ready with a "silent" install/uninstall (that is, whether the product includes functionality for installing and uninstalling itself without manual intervention).

3. **Complete Software Solution.** This criterion judges whether the assessed product provides a complete software solution for its users. Attributes include: (i) whether all components, tools, and information needed for successfully implementing the assessed product are provided as a single package; (ii) whether the packaged solution is condensed -- that is, providing only the required function; and (iii) whether all components of the packaged solution have consistent terms and conditions (sometimes referred to as "T's and C's").

4. **Easy to Integrate.** This criterion is used to measure how easy it is to integrate the assessed product into its target environment. Attributes used in this comparison include: (i) whether the product coexists with, and works well with, other products sold for this market by the assessed product's developer; (ii) whether the assessed product interoperates well with existing applications in its target environment; and (iii) whether the product exploits services of its target platform that have been proven to reduce total cost of ownership.

5. **Easy to Manage.** This criterion measures how easy the assessed product is to manage or administer. Attributes defined for this criterion include: (i) whether the product is operational "out of the box" (i.e., as delivered to the customer); (ii) whether the product, as delivered, provides a default configuration that is appropriate for most installations; (iii) whether the set-up and configuration of the product can be performed with minimal administrative skill and interaction; (iv) whether application templates and/or wizards are provided in the product to simplify use of its more complex tasks; (v) whether the product is easy to fix; and (vi) whether the product is easy to upgrade.

6. **Easy to Learn and Use.** Another criterion to be measured is how easy it is to learn and use the assessed product. Attributes for this measurement include: (i) whether the product's user interface is simple and intuitive; (ii) whether samples and tools are provided, in order to facilitate a quick and successful first-use experience; and (iii) whether quality documentation, that is readily available, is provided.

7. **Right Function.** The assessment process also measures whether the assessed product includes the "right" function. Attributes for making this decision include: (i) whether the product provides competitive features that are attractive to businesses in the target market segment; and (ii) whether the provided features function in a consistent manner within the product, product family, and platform.

8. **Extensible and Flexible.** Another criterion used in the assessment is the product's extensibility and flexibility. Attributes used for this measurement include: (i) whether a clear upgrade path exists to more advanced features and functions; and (ii) whether the customer's investment is protected when upgrading to advanced products.

9. **Reasonable Footprint.** For the mid-market (as well as for many target markets), the availability of computing resources is considered to be important, and thus a criterion used in assessing products for this market is whether the product has a reasonable footprint. Attributes include: (i) whether the product's usage of resources such as random-access memory ("RAM"), central processing unit ("CPU") capacity, and persistent storage (such as disk space) fits well on a

computing platform used in the target environment; and (ii) whether the product's dependency chain is streamlined and does not impose a significant burden.

**10. Target Market Platform Support.** Finally, another criterion used when assessing products for the target market is the platform support. An attribute used for this purpose is whether the product is available on all "key" platforms of the target market. Priority may be given to selected platforms.

The particular criteria described herein, and attributes used for those criteria, have been determined by market research that analyzed what factors were significant to those people making IT purchasing decisions. The assessment process disclosed herein uses these criteria and attributes as a framework, evaluating them at key checkpoints throughout a product's development. The market research also included an analysis of how important the various factors were in the purchasing decision. Therefore, preferred embodiments of the present invention allow weights to be assigned to attributes and/or criteria, enabling them to have a variable influence on a product's assessment score. These weights preferably reflect the importance of the corresponding attribute/criteria to the target market segment. In Fig. 2, rankings are provided with reference to the criteria discussed, showing the relative importance of these factors for IT purchasers in the mid-market segment. (Note that there is not an exact alignment between the criteria shown in the rankings of Fig. 2 and the set of 10 criteria shown in Fig. 1. For example, the "right function" criterion of Fig. 2 is depicted as two separate entries, whereas Fig. 1 shows this as one entry having two measurement attributes. In addition, the "target market platform support" criterion is

not present in Fig. 2. Fig. 2 may be considered as an initial version of the criteria in Fig. 1.)

It should be noted that the attributes and criteria that are important to IT purchasing decisions may change over time. In addition, the relative importance thereof may change. Therefore, embodiments of the present invention preferably provide flexibility in the assessment process and, in particular, in the attributes and criteria that are measured, in how the measurements are weighted, and/or in how a product's assessment score is calculated using this information.

By using the framework of the present invention with its well-defined and objective measurement criteria and attributes, and its objective checkpoints, the assessment process can be used advantageously to guide and focus product development efforts of a product under development, as well as to gauge how well a product that is ready to be marketed will be received by its target market segment. (This will be described in more detail below. See, for example, the discussion of Fig. 9.)

Products that score well using the criteria and attributes described above are products that are affordable, easy to use, easy to deploy, and easy to manage. More specifically, products that score well will provide: competitive pricing that offers an attractive entry price and a reasonable, usage-based increase in price; a total solution as a single package that is fully operational out-of-the-box; a single-server implementation that is available on all key platforms for this market segment; a successful install, configuration, and first-use experience that is fast and requires

minimal skills to complete; high-quality documentation, tools, and user interface that are designed to enable rapid learning and quick exploitation of provided features; clear positioning and integration with similar products; and a clear upgrade path to more advanced capabilities while retaining existing investments.

Preferably, a scale of 1 to 5 is used for measuring each of the attributes during the assessment process. In this manner, relative degrees of support (or non-support) can be indicated. In the examples used herein, a value of 5 indicates the best case, and 1 represents the worst case. In preferred embodiments, textual descriptions are provided for each numeric value of each attribute. These textual descriptions are designed to assist product assessors in performing an objective, rather than subjective, assessment. Preferably, the textual descriptions are defined so that a product being assessed will receive a score of 3 on an attribute if the product meets the market's expectation for that attribute, a score of 4 if the product exceed expectations, and a score of 5 if the product greatly exceeds expectations or sets new precedent for how the attribute is reflected in the product. On the other hand, the descriptions preferably indicate that a product that meets some aspect of an attribute (but fails to completely meet expectations) will receive a score of 2 for that attribute, and a product that obviously fails to meet expectations for the attribute (or is considered obsolete with reference to the attribute) will receive a score of 1.

Fig. 3 provides an example of the textual descriptions that may be used to assign a value to the "priced to be competitive" attribute of the "Priced to Market" criterion that was stated above, and is representative of an entry from an evaluation form or workbook that may be used

during the product assessment. As illustrated therein, a definition 300 is preferably provided to explain the intent of this attribute to the product assessment team. (The information illustrated in Fig. 3 may be used during a product assessment carried out by a product assessment team, and/or by a product development team that wishes to determine how well its product will be assessed.)

Product assessments carried out according to techniques disclosed herein preferably include comparing the product being assessed to at least one competing product. Therefore, this example indicates that identifying information is specified for the assessed product, as well as for two competitive products. See elements 310, 311, 312. For each of these products, a product name and vendor (see elements 320, 330) may be specified, along with version and release information (see element 340) or other information that identifies the particular product. (Rather than comparing the assessed product to competitors' products, it may be informative to compare the product to its predecessor or earlier version/release, in which case this predecessor can be treated as a competitive product during the assessment process.) The price and pricing model for each product (see elements 350, 360) are preferably specified as well. The pricing model may include information such as whether the product's price is computed per user, per processor, as a fixed fee, etc.

Turning now to the textual descriptions (see element 370), in the example, a value of 3 is assigned to this attribute if the price of the assessed product is considered as meeting the price of its competitor or competitors (referred to hereinafter simply as its competitor or competition). A value of 5 is assigned if the assessed product's price significantly beats the competitor's price,



whereas a value of 1 is assigned if the competitor's price significantly beats the assessed product's price. If the assessed product's price beats the competitor's product, but not by a significant amount, then a value of 4 is assigned. Similarly, if the competitor's price beats the assessed product's price, but not significantly, then a value of 2 is assigned.

Finally, element 380 indicates that an optional feature of preferred embodiments allows per-attribute deviations when assigning values to attributes for the assessed product. In this example, the deviation information explains that the value of the "priced to be competitive" attribute may be adjusted if the assessed product is unique or if it is clearly superior to competitive products in selected measurements.

Similarly, descriptive text is preferably created for each of the remaining attributes for use by product assessors.

Referring now to Fig. 4, a flowchart is provided illustrating, at a high level, actions that are preferably carried out when establishing an assessment process according to the present invention. At Block 400, the assessment criteria are determined. The criteria may be determined in a number of ways, depending on factors such as the target marketplace, the type of products to be assessed, and so forth. As discussed earlier, existing market intelligence may be leveraged for this purpose. According to preferred embodiments, a number of attributes are specified within larger groupings or categories of criteria. By way of example, 10 criteria are defined herein for use in the assessment process, and one or more attributes are then defined for measuring each of

these criteria. (It may happen that the criteria and/or attributes are subsequently altered or refined, as discussed below with reference to Block 435, and thus the information established in Block 400 may be considered as an initial version.)

The relative priority of each of the criteria is preferably determined (Block 405). Weights may be assigned to reflect these priorities in an algorithm (see Block 430). By using per-criterion priorities and weighting, the product assessment score determined during the assessment process can be tuned to more precisely reflect the wants and needs of the target marketplace.

Alternatively, rather than using a per-criterion weighting, weights may be assigned for each individual attribute.

In Block 410, objective measurements for each criterion (or, alternatively, for each attribute) are determined. As stated earlier, preferred embodiments strive to eliminate subjectivity, and these objective measurements are key to accomplishing that goal. Refer to the example shown in Fig. 3, where the textual descriptions shown at element 370 illustrate objective measurements that have been defined to assist product assessors when assigning values for a particular attribute.

Block 415 indicates that, optionally, potential deviations may be defined for each of the measurement criterion (or, alternatively, for each attribute). Preferably, whether deviations are allowable depends on the nature of each criterion and factors such as the importance of that criterion to the target marketplace. In the example of Fig. 3, as discussed above, guidelines for

allowing a deviation in how the attribute value is assigned to a product's pricing information have been shown at element 380.

Then, a questionnaire is preferably developed (Block 420) for use when gathering assessment data. Preferred embodiments of the present invention use an initial written or electronic questionnaire to solicit information from the product team. See Fig. 7 for an example of a questionnaire that may be used for this purpose. An inspection process is preferably defined (Block 425), to be used as part of the assessment. This inspection is preferably a third-party evaluation, performed by a product assessment team that is separate and distinct from the product development team, during which further details and measurement data will be gathered.

An algorithm or computational steps are preferably developed (Block 430) to use the measurement data for computing a product assessment score. This algorithm may be embodied in a spread sheet or other automated technique.

One or more trial assessments may then be conducted (Block 435) for validation. For example, one or more existing products and/or competitive products may be assessed, and the results thereof may be analyzed to determine whether an appropriate set of criteria, attributes, priorities, and deviations has been put in place. If necessary, adjustments may be made, and the process of Fig. 4 may be repeated.

A product assessment as disclosed herein is preferably performed in an iterative manner.

This is illustrated in Fig. 5. According to preferred embodiments, assessments or assessment-related activities are carried out at various checkpoints (referred to equivalently herein as “plan checkpoints”) during a product’s development. First, as shown at element 500, assessment activities may be carried out while a product is still in the concept phase (i.e., at a concept checkpoint). In preferred embodiments, this comprises ensuring that the product’s offering team (“OT”) is aware of the criteria and attributes that will be used to assess the product, as well as informing them about the manner in which the assessment will be performed and its impact on their delivery and scheduling requirements.

When the product reaches the planning checkpoint, plan information is preferably used to conduct an initial assessment. This initial assessment is preferably conducted by the offering team, as a self-assessment, using the same criteria and attributes (and the same textual descriptions of how values will be assigned) as will be used by the product assessment team later on. See element 510. The offering team preferably uses its product plans (e.g., the planned product features) as a basis for this self-assessment. Typically, performing an assessment while an IT product is still in the planning phase will prove quite valuable for guiding a product plan. Plans items can be selected from among the candidates, and the subsequent development effort can then focus its efforts, in view of how this product (plan) assessment indicates that the wants and needs of the target marketplace will be met.

As stated earlier, a product assessment score is preferably expressed as a numeric value. A minimum value for an acceptable score is preferably defined, and if the self-assessment at the

planning checkpoint is lower than this minimum value, then in preferred embodiments, the offering team is required to revise its product plan to raise the product's score and/or to request a deviation for one or more low-scoring attributes. Optionally, approval of the revised plan or a deviation request may be required.

Another assessment is then preferably performed during the development phase, as the product nears the end of the development phase (e.g., prior to releasing the product to market). This is illustrated in Fig. 5 by the availability checkpoint (see element 520), and a suitable score during this assessment may be required as an exit checkpoint before the product qualifies for external release. Preferably, this assessment is carried out by an independent team of product assessors, as discussed earlier. At this phase, the assessment is performed using the developed product and its associated information (e.g., documentation, related tools, and so forth that will be delivered to customers in the product package). According to preferred embodiments, if deficiencies are found in the assessed product, then recommendations are provided and the product is revised. Therefore, it may be necessary to repeat the independent assessment more than once.

Fig. 6 provides a flowchart depicting, in more detail, how a product assessment may be carried out. The product team (e.g., planning team or development team, as appropriate) answers the questions on the assessment questionnaire that has been created by the product assessors (Block 600), and then submits this questionnaire (Block 605) to the assessors or evaluators. (Fig. 7 provides a sample questionnaire.) Optionally, the evaluators may acknowledge (Block 610)

receipt of the questionnaire, and primary contact information may be exchanged (Block 615) between the product team and the evaluators.

The evaluators may optionally perform a review of basic product information (Block 620) to determine whether this product is a candidate for undergoing the assessment process. Depending on the outcome (Block 625), then the flow shown in Fig. 6 may exit (if the product is determined not to be a candidate) or it may continue at Block 630.

When Block 630 is reached, then this product is a candidate, and the evaluators preferably generate what is referred to herein as an “assessment workbook” for the product. The assessment workbook provides a centralized place for recording information about the product, and when assessments are performed during multiple product phases (as discussed above), preferably includes the assessment information from each of the multiple assessments for the product. Items that may be recorded in the assessment workbook include planning information, competitive positioning, comparative data for predecessor products, inspection findings, and assessment calculations.

At Block 630, the assessment workbook is preferably populated (i.e., updated) with initial information taken from the questionnaire that was submitted by the product team at Block 600. Note that some of the information on the questionnaire may directly generate measurement data, while for other information, further details are required from the actual product assessment. For example, the product pricing information discussed above with reference to Fig. 3 can be used to

assign a value from 1 to 5, using information from the questionnaire. For measurements related to installation or execution, such as how long it takes to install the product, the questionnaire answers are not sufficient, and thus values for these measurements will be supplied later (e.g., during the inspection).

A product assessment is preferably scheduled (Block 635), and is subsequently carried out (Block 640). Performing the assessment preferably comprises conducting an inspection of the product, when carried out during the development phase, or of the product plan, when carried out in the planning phase. When the operational product (or an interim version thereof) is available, this inspection preferably includes simulating a “first-use” experience, whereby an independent team or party (i.e., someone other than a development team member) receives the product in a package similar to its intended delivery package (that is, some number of CR-ROMs or other storage media, or download instructions, etc.) and then installs the product and begins to use it. (Note that when an assessment is performed using an interim version of a product, the scores that are assigned for the various attributes preferably consider any differences that will exist between the interim version and the final version, to the extent that such differences are known. Preferably, the product team provides detailed information on such differences to the product assessment team. If no operational code is available, then the inspection may be performed by review of code or similar documentation.)

Results of the inspection are captured (Block 645) in the assessment workbook. Values are assigned for each of the measurement attributes (Block 650), and these values are recorded in

the assessment workbook. As discussed earlier, these values are preferably selected from a numeric range, such as 1 to 5, and textual descriptions are preferably defined in advance to assist the assessors in consistently applying the measurements to achieve an objective product assessment score.

Optionally, a similar inspection or analysis process may be carried out for the identified competition and/or predecessor products. (Or, it may happen that this information is already available from earlier assessments.) If so, then this information is also recorded in the assessment workbook.

Once the inspection has been completed and values are assigned and recorded for all of the measurement attributes, a product assessment score is generated (Block 655). One or more recommendations may also be generated, depending on how the product scores on the attributes, to inform the product team where changes should be made to improve the product's score (and therefore, its expected acceptance by the target marketplace).

According to preferred embodiments, any measurement attributes for which the assigned value is 1 or 2 requires follow-up action by the product team, as these are not considered acceptable values. Thus, attributes receiving these values are preferably flagged or otherwise indicated in the assessment workbook. Preferred embodiments also require an overall score of at least 70 percent, at a minimum, and any product scoring lower than 70 percent requires review of its assessment attributes and improvement before being approved for delivery to customers.



Optionally, selected attributes may be designated as critical or imperative for acceptance in the target marketplace. In this case, even though a product's overall assessment score exceeds the minimum acceptable value, if it scores a 1 or 2 on a critical attribute, then review and improvement is required on these scores before the product can be approved.

When weights have been assigned to the various measurement attributes, then these weights may be used to prioritize the recommendations that result from the assessment. In this manner, actions that will result in the biggest improvement in the product assessment score can be addressed first. (It may happen, in some cases, that a relatively minor adjustment or addition to a product makes a large difference in how well the product satisfies the wants and needs of its target market. Prioritizing the recommendations will highlight such adjustments/additions. The prioritization may also help the product team to better understand the target market, and/or stimulate discussion on how a particular attribute can be better satisfied in a timely and efficient manner.)

The assessment workbook and analysis is then sent to the product team (Block 660) for their review. The product team then prepares an action plan (Block 665), as necessary, to address each of the recommendations. A meeting between the product assessors and representatives of the product team may be held to discuss the findings in the assessment workbook and/or the recommendations. The action plan may be prepared thereafter. Preferably, the actions from this action plan are recorded in the assessment workbook.

At Block 670, a test is made as to whether this product (or product plan) should proceed. If not (for example, if the product assessment score is too low, and sufficient improvements do not appear likely or cost-effective), then the process of Fig. 6 is exited. Otherwise, as shown at Block 675, the action plan is carried out. For example, if the product is still in the planning phase, then Block 675 may comprise selecting different line items to be included in the product and/or redefining the existing line items. If the product is in the development phase, then Block 675 may comprise redesigning function, revising documentation, and so forth, depending on where low attribute scores were assigned.

Block 680 indicates that, when the product's action plan has been carried out, an application for product approval may be submitted. This application is then reviewed (Block 685) by the appropriate person(s), who is/are preferably distinct from the assessment team, and if approved (i.e., the test at Block 690 has a positive result), then the process of Fig. 6 is complete. Otherwise, if Block 690 has a negative result, then the product's application is not approved (for example, because the product's assessment score is still too low, or the low-scoring attributes are not sufficiently improved, or because this is an interim assessment), and the process of Fig. 6 iterates, as shown at Block 695.

Optionally, a special designation may be granted to the product when the test in Block 690 has a positive result. This designation may be used, for example, in the product's marketing materials, indicating that this product has passed the assessment criteria. Thus, a product that fails to meet the minimum product assessment score may still be delivered to the marketplace, but

without the special designation. When using this type of special designation, a subset of an IT developer's products may receive such designations, and these products may be used for purposes of comparison or when assessing newly-developed products. For example, one of these previously-assessed products may be used in the role of a competing product, as shown at elements 311 or 312 of Fig. 3, and/or for purposes of determining the newly-developed product's ease of integration with existing products. Furthermore, the test performed at Block 620 of Fig. 6 may be made with reference to whether the product's basic product information indicates that this product is a candidate for receiving the special designation, and the decisions made at Block 670 and 690 may be made with reference to whether this product remains a candidate for, and should receive, respectively, the special designation.

As stated earlier, a minimum score is preferably specified for the product assessment process. In addition to using this minimum score for determining when an assessed product is required either (i) to make changes and undergo a subsequent assessment and/or (ii) to justify its deviations, the minimum score may be used as a gating factor for receiving the special designation discussed above. Referring now to Fig. 8, an example is provided that uses two different scores for assigning special designations to assessed products. As shown therein (see element 800), a product may be designated as "star" if its overall product assessment score exceeds 80 percent (or some other appropriate score) and each of the assessed attributes has been assigned a value of 3 or higher on the 5-point scale. Or, the product may be designated as "ready" (see element 810) if the following criteria are met: (1) its overall product assessment score exceeds 70 percent; (2) a committed plan has been developed that addresses all attributes scoring lower than 3 on the 5-

point scale; and (3) a committed plan is in place to satisfy, before availability of the product to its customers, all attributes that have been determined to be "critical" for success in the target marketplace. (Alternative criteria for assigning a special designation to a product may be defined, according to the needs of a particular environment in which the techniques disclosed herein are used.)

Element 820 provides a sample list of criteria and attributes that have been identified as critical. In this example, 9 of the 10 measurement criteria are represented. (That is, a critical attribute has not been identified for the "target market platform support" category.) For these 9 criteria, 16 different attributes are identified as critical. By comparing the list at 820 to the attributes identified in Fig. 1, it can be seen that there are a number of attributes that are considered important for measuring, but that are not considered to be critical. (For example, in the "priced to market" criterion, "competitive pricing" and "price linked to usage" are considered critical attributes, but the "total cost of solution is competitive and attractive" is not considered critical.) Preferably, the identification of critical attributes depends on the wants and needs of the target marketplace, and is substantiated with market intelligence or consumer feedback. This list may be revised over time, as necessary, to keep pace with changes in those wants and needs. When weights are assigned to attributes for computing a product's assessment score, as described above, a relatively higher weight is preferably assigned to the attributes appearing on the critical attributes list.

Fig. 9 shows a sample report 900 providing an example of assessment results for an

assessed product named "Product XYZ". Preferably, a report is prepared after each assessment, and provides information that has been captured in the assessment workbook. As shown at element 910, the product's overall assessment score is listed. In this example, the assessed product has received an overall score of 87.65 percent. It has been compared to two other products, "Product ABC" (which may be a predecessor from the same company) and "Acme Computing Product" (which may be a competitor's product). Using the same measurement criteria and attributes, these products received scores of 67.89 percent and 71.23 percent, respectively. Thus, the product team is provided with an at-a-glance view of how their product compares to other products for the same marketplace. This allows the product team to determine how well their product will be received by its target marketplace, and when the score is lower than the required minimum, to gauge the amount of rework that will be necessary before the product is made available to customers.

A summary 920 is also provided, listing each of the attributes that did not achieve the minimum acceptable score (which, in preferred embodiments, is a 3 on the 5-point scale, as stated above). In this example, two attributes 921, 922 failed to meet this minimum score. In the example report, the actual score assigned to the attributes is presented, along with an impact value and comments. The impact value indicates, for each attribute, how much of an improvement to the overall assessment score would be realized if this attribute's score was raised to the minimum score of 3. For example, if the installation of Product XYZ was repackaged so that the product and all of its dependencies were installable from a single package, then the assessment score could be raised from 87.65 percent to 88.32 percent, an increase of .67 percent. Similarly, a .34 percent

improvement could be realized by improving the score for the “samples and tools are provided” attribute 922. For each attribute in this summary, the assessment team preferably provides comments that explain why the particular attribute value was assigned.

A recommended actions summary 930 is also provided, according to preferred embodiments, notifying the product team as to the assessment team’s recommendations for improving the product’s score. In this example, two actions have been provided, one for each of the attributes that did not meet requirements.

Note that the attributes in summary 920, and the corresponding actions in summary 930, are listed in decreasing order of potential improvement in the assessment score. This prioritized ranking is beneficial to the product team, as it allows them to prioritize their efforts for revising the product in view of where the most significant gains can be made in product acceptance. (Preferably, attribute weights are used in determining the impact values shown for each attribute in summary 920, and these impact values are then used for the prioritization.)

Additional, more-detailed information may also be included in assessment reports, although this detail has not been shown in the sample report 900. Preferably, the summary information shown in Fig. 9 is followed by a complete listing of all attributes that were measured, the measurement values assigned to those attributes, and any comments provided by the assessment team. If this product has previously undergone an assessment and is being reassessed as to improvements that have been made, then the earlier measurement values are also preferably

provided. Optionally, per-attribute values of the competitive products against which this product was compared may also be provided. Where critical attributes have been defined, these attributes may be visually highlighted in the report.

Presently, there is a strong focus in the IT industry on so-called “autonomic computing” initiatives. Fig. 10 provides a chart listing generally-accepted goals or characteristics of autonomic computing, which are typically broken down into four factors: (1) self-configuring; (2) self-healing; (3) self-optimizing; and (4) self-protecting. Fig. 10 also provides a detailed description of each of these factors. An IT product exhibiting these characteristics may be considered as supporting autonomic computing.

The criteria and attributes that were defined for assessing an IT product’s acceptance by the mid-market, and extensions of these attributes, have been evaluated with reference to these autonomic computing characteristics. Fig. 11 provides a chart 1100 showing how attributes from the Easy to Install, Easy to Manage, Easy to Integrate, Easy to Learn and Use, and Extensible and Flexible criteria may be mapped to the autonomic computing characteristics. Optionally, a product’s support for autonomic computing characteristics can be factored into the assessment of how well the product meets the wants and needs of its target marketplace by reflecting the autonomic computing characteristics in the textual descriptions that are used for assigning values to one or more of the measurement attributes. This will now be described with reference to the mapping in Fig. 11. As shown therein with reference to the Easy to Install criteria, if an IT product can be installed and operated with minimal skill and interaction, then the product can be

considered as meeting requirements for the self-configuring characteristic. See element 1110.

(Note that the description for “self-configuring” in row 1110 aligns somewhat more closely with the “Easy to Manage” criterion definition in Fig. 1, as opposed to the “Easy to Install” criterion.

This illustrates that one implementation of the present invention may arrange the attributes differently than another implementation, if desired. For example, one or more attributes from the “Easy to Install” criterion may be moved to the “Easy to Manage” criterion.)

The Easy to Manage criterion is addressed at element 1120. If upgrades can be performed with minimal skill and interaction, then the product can again be considered self-configuring. If problems can be fixed with minimal skill and interaction, then the product may be considered as self-healing. If performance of the product can be improved with minimal skill and interaction, then the product may be considered as self-optimizing. And, if security threats to an IT infrastructure can be neutralized with minimal skill and interaction, then this product may be considered as possessing the self-protecting characteristic.

If the product is able to detect other products, and integrate with those other products, then it may be considered as meeting attributes of the Easy to Integrate criterion (see element 1130), and also as having the characteristic of self-configuring.

A product that has the self-optimizing characteristic allows users and administrators to worry less about having to do everything correctly from the start, and thus may be considered as meeting attributes of the Easy to Learn and Use criterion. See element 1140. Similarly, a product



that has the self-protecting characteristic allows less worry over accidental exposure of sensitive information, and thus this is another reason for considering the product easy to learn and to use.

Finally, if extensions can be made to the product with minimal skill and interaction, then the product may be considered as having the self-configuring characteristic, and as possessing attributes of the Extensible and Flexible criterion, as shown at element 1150.

Thus, the chart 1100 in Fig. 11 demonstrates that attributes can be defined in different ways and extended, in view of how a product is to be evaluated, and that the criteria and attributes may be applied for purposes other than how a product will be accepted by its target marketplace. Therefore, an assessment may be performed using attributes such as those presented in Fig. 11 to determine an IT product's support for the characteristics of autonomic computing.

As has been demonstrated, the present invention defines advantageous techniques for assessing IT products. Importance of various attributes to the target marketplace are reflected in the assessments, and assessment results may then be provided to product teams to influence the importance of product planning and/or development efforts.

The disclosed techniques may also be used advantageously in methods of doing business. In one aspect, these techniques may be used to improve product development efforts by companies developing IT products. For example, the disclosed techniques may be leveraged to prioritize line item candidates during the product planning phase and/or to prioritize development

work during the development phase. The disclosed techniques may also be used in a predictive manner, to predict how well a product will be accepted in its target market. This information may be used for business planning purposes (e.g., to predict revenues and market share). In another aspect, the disclosed techniques may be used to implement a third-party assessment service. Users of this service may include product teams who wish to have an independent assessment of their products. In either aspect, fees may optionally be charged for the product assessments. Various revenue models may be used for a fee-based service, such as pay-per-use billing, a subscription service, monthly or other periodic billing, and so forth.

As will be appreciated by one of skill in the art, embodiments of techniques of the present invention may be provided as methods, systems, or computer program products. Accordingly, an implementation of techniques of the present invention may take the form of an entirely hardware embodiment, an entirely software embodiment, or an embodiment combining software and hardware aspects. Furthermore, an implementation of techniques of the present invention may take the form of a computer program product which is embodied on one or more computer-usable storage media (including, but not limited to, disk storage, CD-ROM, optical storage, and so forth) having computer-usable program code embodied therein.

The present invention has been described with reference to flowchart illustrations and/or block diagrams of methods, apparatus (systems), and computer program products according to embodiments of the invention. It will be understood that each block of the flowchart illustrations and/or block diagrams, and combinations of blocks in the flowchart illustrations and/or block

diagrams, can be implemented by computer program instructions. These computer program instructions may be provided to a processor of a general purpose computer, special purpose computer, embedded processor, or other programmable data processing apparatus to produce a machine, such that the instructions, which execute via the processor of the computer or other programmable data processing apparatus, create means for implementing the functions specified in the flowchart and/or block diagram block or blocks.

These computer program instructions may also be stored in a computer-readable memory that can direct a computer or other programmable data processing apparatus to function in a particular manner, such that the instructions stored in the computer-readable memory produce an article of manufacture including instruction means which implement the function specified in the flowchart and/or block diagram block or blocks.

The computer program instructions may also be loaded onto a computer or other programmable data processing apparatus to cause a series of operational steps to be performed on the computer or other programmable apparatus to produce a computer implemented process such that the instructions which execute on the computer or other programmable apparatus provide steps for implementing the functions specified in the flowchart and/or block diagram block or blocks.

While preferred embodiments of the present invention have been described, additional variations and modifications in those embodiments may occur to those skilled in the art once they

learn of the basic inventive concepts. Therefore, it is intended that the appended claims shall be construed to include both the preferred embodiment and all such variations and modifications as fall within the spirit and scope of the invention.